

4.0 EVALUATION OF ALTERNATIVES

4.1 ALTERNATIVES SCREENING PROCESS – TIER 1

The consultant project team convened on December 8, 2006 to review the previously developed I-10 widening alternatives and local access options, and to complete a Tier 1 Alternatives Screening Evaluation. A multi-discipline team was selected to review and rank each I-10 widening alternative and local access option to initially determine which of them best meet the project goals and objectives based solely on technical merits.

The initial activity was to identify the project goals and objectives, along with a weighting system to allow for a prioritization of each objective. Each item was identified and reviewed relative to the other objectives based on priority. This allowed each scoring item to be assigned a weighted adjustment factor to ensure higher priority issues were given a higher weighting when scoring each I-10 widening alternative and local access option.

The multi-discipline team consisted of the following members:

- Steven Wilcox – Design Manager
- Charles Burm – Senior Roadway Engineer
- Rodney Bragg – Senior Traffic Engineer
- Kammy Horne – Senior Environmental Planner
- John McNamara – Senior Transportation Planner

4.1.1 Interstate 10 Widening Alternatives

4.1.1.1 Evaluation Matrix

The individual evaluation criteria range in weight from 0.1 to 1.0. The scoring for these items is ranked from 1.0 to 5.0 when applied to the individual alternatives.

Evaluation Criteria

The evaluation criteria developed for the I-10 widening alternatives included the following:

- Operational performance of the I-10 express lanes between Buckeye and Baseline Roads;
- Traffic operations of the remaining segments of the I-10 express lanes; the I-10 local lanes; the I-17, SR 143, US 60 mainlines; and the system traffic interchanges;
- Operational performance of the I-10 HOV lanes;
- Geometric design of the I-10 express and local lanes; I-17, SR 143, and US 60 mainlines; and the system traffic interchanges;
- Ability to provide for local access;
- Environmental fatal flaws;
- Right-of-way impacts (acres and estimated cost);
- Business and residential displacements;

- Preliminary construction cost;
- Constructability;
- Plan compatibility;
- Local agency acceptance

Evaluation Criteria Weighting

- Operational performance of the I-10 express lanes between Buckeye and Baseline Roads: [Weighting = 1.0]

The I-10 express lanes should operate with level-of-service (LOS) 'D' or better operational characteristics based on Design Year 2030 traffic volume projections provided by the Maricopa Association of Governments (MAG). For alternatives that include local lanes, the express lanes should operate at LOS 'D' or better within the limits of the local lanes.

The I-10 widening concept should provide sufficient capacity to provide an acceptable level-of-service allowing for minor variations in the design year traffic volume projections caused by unanticipated development or changes in regional travel patterns.

Each alternative will be evaluated for the ability to meet the minimum operational performance goal (LOS 'D') for the I-10 express lanes between Buckeye Road and Baseline Road. Any alternative that does not achieve this goal will be eliminated from further consideration.

- Operational performance of the remaining segments of the I-10 express lanes; the I-10 local lanes; the I-17, SR 143, and US 60 mainlines; and the system traffic interchanges: [Weighting = 0.9]

The termini of the I-10 widening alternatives must connect back into I-10, I-17, SR 143 and US 60 in a manner that provides for operational efficiency in accordance with current Arizona Department of Transportation (ADOT) design policies and procedures.

The local lanes may operate with a lower level-of-service, but should not queue traffic to the extent that would negatively impact the operations of the express lanes between Buckeye Road and Baseline Road.

- Operational performance of the I-10 HOV lanes: [Weighting = 0.9]

The alternatives should include an appropriate number of HOV lanes on the I-10 express lanes to provide the capacity necessary for the projected Year 2030 HOV traffic demand, to promote carpooling, and support the planned Bus Rapid Transit (BRT) and Express Bus routes identified in the Regional Transportation Plan (RTP).

The alternatives should include provisions for a potential future HOV directional ramp connection between I-10 (east of the I-10/I-17 TI) and I-17 (west of the I-10/I-17 TI) in accordance with the adopted HOV system plan and the recommendations of the *MAG Value Lanes Study*. This ramp would provide for HOV system continuity between the existing HOV lanes on I-10 and the planned

HOV lanes on I-17 as identified in the RTP. The HOV ramp would eliminate the need for travelers using the I-10 or I-17 HOV lanes to weave across the express lanes approaching and departing the I-10/I-17 TI, thereby improving the traffic operations in these areas.

- Geometric design of the I-10 express and local lanes; I-17, SR 143, and US 60 mainlines; and the system traffic interchanges: [Weighting = 1.0]

The design of the alternatives must achieve AASHTO and ADOT geometric design standards to optimize highway safety and operational characteristics and minimize owner liability. The termini of the I-10 widening alternatives must connect with I-10, I-17, SR 143 and US 60 in a manner that would maintain lane balance and continuity in accordance with current ADOT design practice.

The AASHTO geometric design standards are mandatory for all elements. The ADOT geometric design standards are mandatory, unless a formal design exception can be obtained from ADOT Roadway Group.

- Ability to provide for local access: [Weighting = 0.8]

The ability to provide access between the freeway system and local arterial streets is important to the local communities. Local access is also important to minimize emergency response time for incident management on the freeway system and to residences and businesses in the local community.

Local access points should be retained when technically, environmentally and economically feasible without negatively impacting the operations for the proposed I-10 improvements.

- Environmental fatal flaws: [Weighting = N/A]

An identified environmental fatal flaw will automatically eliminate an alternative from further consideration. An environmental “fatal flaw” is defined as a known impact to an environmental resource that cannot be mitigated and would require an alternative roadway alignment.

- Right-of-way impacts: [Weighting = 0.8]

The estimated acreage of acquisition area and the estimated right-of-way costs should be minimized for the I-10 widening alternatives.

- Business and residential displacements: [Weighting = 0.8]

The number of businesses and residences that may be displaced by the proposed alternatives should be minimized by the alternatives.

- Preliminary construction cost: [Weighting = 0.8]

The I-10 widening alternative operational and geometric design characteristics must be achieved in the most cost-effective manner to obtain the necessary funding to implement the new facility.

- Constructability: [Weighting = 0.9]

The I-10 widening alternatives must allow the traveling public to utilize the existing roadways during the construction of the new facility to the maximum extent possible.

The ultimate “master plan” for the I-10 corridor must allow for a long-term implementation plan that would include the opportunity for phased construction of meaningful projects recognizing funding constraints.

- Plan compatibility: [Weighting = 0.9]

The I-10 widening alternatives must meet the objectives of the RTP and other Maricopa Association of Governments (MAG) adopted transportation planning documents.

- Local agency acceptance: [Weighting = 0.8]

The ability of the I-10 widening alternatives to obtain local agency support for implementation as it is currently understood. This issue is critical to the perception of ADOT's performance. Political influences can alter costs, schedule and public acceptability.

Scoring Methodology

The multi-discipline team reviewed each alternative based on evaluation criteria. The resultant value of each item was determined by group discussion and overall consensus by the evaluation team. The composite alternative score is the sum of each alternative evaluation criteria score multiplied by the weighting value. The final alternative scores, rankings and recommendations are shown on Table 29 on Page 141.

4.1.1.2 Alternatives Analysis

This document includes a general summary of each I-10 widening alternative. Additional information regarding the traffic operations of each alternative is included in Section 2.0 of this document. A detailed description of each alternative is included in Section 3.0 of this document.

Alternative No. 1: 1988 Express/Local Lanes Concept

Alternative 1 was originally developed in the 1980's with the *I-10 Corridor Refinement Study* that included an Express/Local lanes configuration between Buckeye and Baseline Roads. The number of lanes on the I-10 express lanes would be reduced to minimize impacts to the adjacent development. No additional improvements would be proposed on I-10 and I-17 outside of the limits of the local lanes.

Two to five express lanes would be provided in each direction of travel between Buckeye and Baseline Roads. The local lanes would vary from two to three lanes in each direction of travel that would provide access to SR 143 and the local street system. Auxiliary lanes would not be provided on the local lanes between service interchange entrance and exit ramps. One to two lane

“express to local lanes” and “local to express lanes” transfer ramps would be provided to allow access between the I-10 express and local lanes.

The I-10/SR 143 TI would be reconstructed to provide a fully directional freeway-to-freeway system interchange with ramp connections with SR 143 and the local lanes.

Five express lanes would be provided on westbound I-10 approaching the I-10/I-17 TI. The center lane would operate as an optional lane allowing three lanes to continue on I-10 and I-17. Two express lanes would be provided on eastbound I-10 through the I-10/I-17 TI.

Four eastbound express lanes would be provided on I-10 approaching the I-10/US60 TI. Two lanes would continue to the south on I-10, with three lanes continuing to eastbound US 60. Two express lanes would be provided on westbound I-10 through the I-10/US60 TI.

One HOV lane would be retained in each direction of travel through the study area. An HOV directional ramp would not be provided between I-10 (east of the I-10/I-17 TI) and I-17 (west of the I-10/I-17 TI).

- Operational performance of the I-10 express lanes between Buckeye and Baseline Roads: [Score = 2.0]

The I-10 express lanes would operate at LOS ‘D’ or better within the limits of the local lanes. However, the number of express lanes on I-10 at the I-10/I-17 TI (2 lanes) and the I-10/US60 TI (2 lanes) would restrict the allowable traffic growth at the Broadway Curve to approximately 388,000 vehicles per day (vpd). In comparison, the No-Build alternative would provide the capacity for approximately 320,000 vpd at this location.

- Operational performance of the remaining segments of the I-10 express lanes; I-10 local lanes; the I-17, SR 143, and US 60 mainlines; and the system traffic interchanges: [Score = 2.0]

Based on the operational analysis conducted for this alternative, congestion (LOS ‘E’ or ‘F’) would be anticipated to occur at the following locations within the study area:

- A.M. peak period: westbound I-10 from Elliot Road south to the I-10/SR202L TI
- A.M. peak period: eastbound I-10 from Roosevelt Street north to the I-10/SR51 TI
- A.M. peak period: westbound US 60 from the I-10/US60 TI east to Mill Avenue
- A.M. peak period: westbound local lanes from 40th Street east to the I-10/US60 TI
- P.M. peak period: eastbound I-10 from Buckeye Road north to the I-10/SR51 TI
- P.M. peak period: eastbound I-17 approaching the I-10/I-17 TI
- P.M. peak period: westbound I-17 from 7th Street east to the I-10/I-17 TI
- P.M. peak period: eastbound US 60 from Mill Avenue west to the I-10/US60 TI
- P.M. peak period: southbound SR 143 from the I-10/SR143 TI north to SR 202L (at the airport)
- P.M. peak period: northbound SR 143 from the SR 202L (at the airport) south to University Drive
- P.M. peak period: eastbound local lanes from the I-10/US60 TI to Buckeye Road

The Alternative 1 Express/Local lanes concept would provide the capacity for an additional traffic demand of approximately 68,000 vpd at the Broadway Curve, increasing the capacity to approximately 388,000 vpd at that location.

However, the facility would be constrained at the I-10/I-17 TI and the I-10/US60 TI with two express lanes on I-10 through these system interchanges. This configuration at the I-10/US60 TI would create a “bottleneck” that would restrict the allowable traffic growth on I-10 to only 7,000 vpd between Baseline Road and the Santan Freeway when compared to the No-Build alternative. This situation will cause traffic to divert from I-10 to other freeway corridors and the local arterial street system during the A.M. and P.M. peak travel periods.

- Operational performance of the I-10 HOV lanes: [Score = 2.0]

One HOV lane would be retained in each direction of travel through the study area. Based upon the year 2030 traffic volume projections, one HOV lane (on the I-10 express lanes) would not provide sufficient capacity for the HOV traffic demand that is projected for the segment of I-10 between I-17 and US 60.

The planned HOV directional ramp between the I-10 express lanes (east of the I-10/I-17 TI) and I-17 (west of the I-10/I-17 TI) would not be provided with this alternative. Traffic using the I-10 or I-17 HOV lanes would be required to weave across the general-purpose lanes approaching and departing the I-10/I-17 TI that would result in congestion in these areas.

- Geometric design of the I-10 express and local lanes; I-17, SR 143, and US 60 mainlines; and the system interchanges: [Score = 1.0]

Alternative 1 would not incorporate the current ADOT design practice for: 1.) lane balance for the development of additional lanes in advance of a system interchange, 2.) minimum number of lanes through a system interchange, 3.) method of terminating lanes departing a system interchange, 4.) and providing auxiliary lanes between service interchange entrance and exit ramps.

- Ability to provide for local access: [Score = 4.0]

Access would be retained between I-10 and the majority of the existing service interchanges. However, freeway access would be eliminated between the Phoenix Sky Harbor International Airport (PSHIA) west entrance and I-17. The existing freeway access between eastbound I-10 and southbound 48th Street would also be eliminated with this alternative.

Due to the close proximity of University Drive to the new I-10/SR143 TI directional ramps, the south ramps of the SR143/University Drive TI would be disconnected from the SR 143 mainline and replaced with new northbound and southbound connector roads that would extend from University Drive to the 48th Street/Broadway Road intersection. Freeway access would be provided at the Broadway Road TI.

Options to restore local access at these locations are presented later in Section 4.0 of this document.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified that would automatically eliminate this alternative from further consideration.

- Right-of-way impacts: [Score = 4.0]

The estimated land acquisition required for this alternative would be 59 acres, with an estimated cost of approximately \$207 million.

- Business and residential displacements: [Score = 4.0]

It is anticipated that approximately 54 businesses and 240 residences would be displaced with this alternative.

- Preliminary construction cost: [Score = 4.0]

The estimated cost (including design and construction) of this alternative is \$765 million.

- Constructability: [Score = 4.0]

It is anticipated that this alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Lane closures and restrictions would be required during construction of the new crossroad and system interchange ramp bridge structures over the existing I-10 roadways.

This alternative would allow for phased implementation of construction projects over time with the current funding identified in the RTP, and as additional funding becomes available in the future.

- Plan compatibility: [Score = 2.0]

This alternative would not include provisions for a potential future HOV directional ramp connection between I-10 (east of the I-10/I-17 TI) and I-17 (west of the I-10/I-17 TI) in accordance with the adopted HOV system plan and the recommendations of the *MAG Value Lanes Study*.

One HOV lane would be retained in each direction of travel through the study area. Based upon the year 2030 traffic volume projections, one HOV lane (on the I-10 express lanes) would not provide sufficient capacity for the HOV traffic demand that is projected for the segment of I-10 between I-17 and US 60. This condition would not achieve the goals identified in the RTP to provide efficient multi-modal transportation opportunities.

- Local agency acceptance: [Score = 2.0]

This alternative should expect lower acceptance due to the elimination of direct freeway access at three locations, and because a significant benefit in capacity and level-of-service would not be realized when compared to the other I-10 widening alternatives.

This alternative should also expect concerns by the local agencies regarding impacts to adjacent residential and commercial development.

Alternative No. 2: Express/Local Lanes Concept

This alternative was developed to update Alternative 1 to provide the additional capacity needed for the 2030 traffic demand for the I-10 corridor, and to meet current design standards and practice.

At the north and south limits of the local lanes, the development of the entrance and exit ramp connections with I-10, I-17, SR 143 and US 60 were modified to conform to current ADOT design practice for lane continuity and operational efficiency.

The I-10 express lanes would include three to six lanes in each direction of travel between Buckeye and Baseline Roads. The local lanes would vary from three to four lanes in each direction of travel that would provide access to SR 143 and the local street system. Two lane “express to local lanes” and “local lanes to express lanes” transfer ramps would provide connections between the I-10 express and local lanes at selected locations. Auxiliary lanes would generally be provided between service interchange entrance and exit ramps.

The I-10/SR 143 TI would be reconfigured to provide a fully directional freeway-to-freeway system interchange with ramp connections with SR 143 and the local lanes.

Six express lanes would be developed on westbound I-10 approaching the I-10/I-17 TI that would allow three lanes to continue on I-10 to I-17. Three express lanes would be provided on eastbound I-10 through the I-10/I-17 TI.

Six express lanes would also be developed on eastbound I-10 approaching the I-10/US60 TI. Three lanes would continue to the south on I-10, and three lanes would continue to eastbound US 60. Three express lanes would be provided on westbound I-10 through the I-10/US60 TI.

A potential future HOV directional ramp would be provided between I-10 (east of the I-10/I-17 TI) and I-17 (west of the I-10/I-17 TI). One HOV lane would be retained on I-10 in each direction of travel on I-10 between SR 51 and I-17. Two HOV lanes would be provided in each direction of travel between I-17 and US 60, and one HOV lane would be retained in each direction of travel between US 60 and the Santan Freeway.

- Operational performance of the I-10 express lanes between Buckeye and Baseline Roads: [Score = 4.0]

The I-10 express lanes would operate at LOS 'D' or better within the limits of the local lanes. Due to the additional lanes provided on I-10 through the I-10/I-17 TI and the I-10/US60 TI, an additional 42,000 vpd (430,000 vpd total) would be anticipated to travel through the Broadway Curve each day when compared to Alternative 1, and 108,000 vpd above the No-Build Alternative.

- Operational performance of the remaining segments of the I-10 express lanes; I-10 local lanes; the I-17, SR 143, and US 60 mainlines; and the system traffic interchanges: [Score = 4.0]

Based on the operational analysis conducted with this alternative, congestion (LOS 'E' or 'F') would be anticipated to occur at the following locations within the study area:

- A.M. peak period: westbound I-10 from Baseline Road south to Ray Road
- A.M. peak period: westbound US 60 from the I-10/US60 TI east to Mill Avenue
- A.M. peak period: westbound local lanes from 40th Street east to the I-10/US60 TI
- P.M. peak period: westbound I-17 from 7th Street east to the I-10/I-17 TI
- P.M. peak period: eastbound US 60 from Mill Avenue west to the I-10/US60 TI
- P.M. peak period: southbound SR 143 from the I-10/SR143 TI north to SR 202L (at the airport)
- P.M. peak period: northbound SR 143 from University Drive to the I-10/SR143 TI
- P.M. peak period: eastbound local lanes from the I-10/US60 TI to the I-10/ I-17 TI

The eastbound and westbound local lanes would operate with congestion during the peak periods, but the congestion on the local lanes would not be expected to cause traffic queue lengths that would impact the operations on the I-10 express lanes.

The level-of-service on I-10 would be improved between SR 51 and I-17, and between Baseline Road and Chandler Boulevard. Further refinement of the connections between the local lanes and I-10, I-17, SR 143 and US 60 will be conducted to address possible areas of congestion.

Alternative 2 would provide the capacity for an additional traffic demand of approximately 42,000 vpd at the Broadway Curve when compared to Alternative 1. By providing one additional express lane on the I-10 at the I-10/US60 TI, an additional 30,000 vpd would have the ability to travel on I-10 between Baseline Road and Chandler Boulevard.

The additional traffic that would use the I-10 corridor would decrease the volume of traffic on other freeway corridors and the local arterial street system during the A.M. and P.M. peak hour travel periods.

- Operational performance of the I-10 HOV lanes: [Score = 5.0]

One HOV lane would be retained on I-10 in each direction of travel between SR 51 and I-17. Two HOV lanes would be provided in each direction of travel on I-10 between I-17 and US 60, and one HOV lane would be retained in each direction of travel between US 60 and the Santan Freeway.

This HOV lane configuration would provide the capacity needed for the projected 2030 HOV demand throughout the corridor.

A potential future HOV directional ramp would be planned between I-10 (east of the I-10/I-17 TI) and I-17 (west of the I-10/I-17 TI) with this alternative. The direct connection between I-10 and I-17 HOV lanes will improve the traffic operations on I-10 and I-17 approaching and departing the I-10/I-17 TI.

- Geometric design of the I-10 express and local lanes; I-17, SR 143, US 60 mainlines, and the system interchanges: [Score = 4.0]

Alternative 2 would achieve the requirements of the AASHTO and ADOT RDG design standards and current design practice.

The termini of the local lanes would transition back into I-10, I-17, SR 143 and US 60 in a manner that would maintain lane balance and lane continuity in accordance with current ADOT design practice. Auxiliary lanes would generally be provided on the local lanes between successive service interchange entrance and exit ramps.

- Ability to provide for local access: [Score = 4.0]

Access would be retained between I-10 and the majority of the existing service interchanges. However, freeway access would be disconnected between the PSHIA west entrance and I-17. The existing freeway access between eastbound I-10 and southbound 48th Street would also be eliminated with this alternative.

Due to the close proximity of University Drive to the new I-10/SR143 TI directional ramps, the south ramps of the SR143/University Drive TI would be disconnected from the SR 143 mainline and replaced with new northbound and southbound connector roads that would extend from University Drive to the 48th Street/Broadway Road intersection. Freeway access would be provided at the Broadway Road TI.

Options to restore local access at these locations are presented later in Section 4.0 of this document.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified that would automatically eliminate this alternative from further consideration.

- Right-of-way impacts: [Score = 3.0]

The estimated land acquisition required for this alternative would be 78 acres, with an estimated cost of approximately \$262 million.

- Business and residential displacements: [Score = 3.0]

Approximately 61 businesses and 261 residences would be displaced with this alternative.

- Preliminary construction cost: [Score = 3.0]

The estimated cost (including design and construction) for this alternative is \$904 million.

- Constructability: [Score = 4.0]

It is anticipated that this alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Lane closures and restrictions would be required during construction of the new crossroad and system interchange ramp bridge structures over the existing I-10 roadways.

This alternative would allow for phased implementation of construction projects over time with the current funding identified in the RTP, and as additional funding becomes available in the future.

- Plan compatibility: [Score = 4.0]

This alternative would include provisions for a potential future HOV directional ramp connection between I-10 (east of the I-10/I-17 TI) and I-17 (west of the I-10/I-17 TI) in accordance with the adopted HOV system plan and the recommendations of the *MAG Value Lanes Study*.

One HOV lane would be retained on I-10 in each direction of travel between SR 51 and I-17. Two HOV lanes would be provided on I-10 in each direction of travel between I-17 and US 60, and one HOV lane would be retained in each direction of travel between US 60 and the Santan Freeway. This HOV lane configuration would provide the capacity needed for the projected 2030 HOV demand and achieve the intent of the RTP of providing a balanced multi-modal transportation corridor.

- Local agency acceptance: [Score = 3.0]

This alternative should expect lower acceptance due to the elimination of direct freeway access at three locations, but expect higher acceptance due to the significant benefit in traffic capacity and level-of-service that would be realized with this alternative when compared to the other I-10 widening alternatives.

This alternative should also expect concerns by the local agencies regarding impacts to adjacent residential and commercial development.

Alternative No. 3: Express/Local Lanes Concept (with HOV Viaduct)

Alternative 3 would modify Alternative 2 to include an elevated viaduct structure for the HOV lanes between I-17 and US 60. The viaduct would begin east of 24th Street and continue to the east to Alameda Drive. All roadway elements proposed for I-10, I-17, SR 143 and US 60 are the same as

Alternative 2. The level-of-service analysis results for Alternative 3 are also the same as Alternative 2.

Alternative 3 was developed to evaluate the feasibility of placing the HOV lanes (2 lanes in each direction of travel) on an elevated viaduct to attempt to reduce the overall width of the proposed freeway improvements associated with Alternative 2. The narrower right-of-way acquisition area might reduce the impacts on the adjacent commercial and residential developments.

- Operational performance of the I-10 express lanes between Buckeye and Baseline Roads: [Score = 4.0]

Same as Alternative 2

- Operational performance of the remaining segments of the I-10 express lanes; the I-10 local lanes; the I-17, SR 143, and US 60 mainlines; and the system traffic interchanges: [Score = 4.0]

Same as Alternative 2

- Operational performance of the I-10 HOV lanes: [Score = 5.0]

Same as Alternative 2

- Geometric design of the I-10 express and local lanes; I-17, SR 143, and US 60 mainlines; and system traffic interchanges: [Score = 4.0]

Same as Alternative 2

- Ability to provide for local access: [Score = 4.0]

Same as Alternative 2

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified that would automatically eliminate this alternative from further consideration. However, this alternative would induce additional visual impacts to the surrounding community when compared with the other alternatives.

- Right-of-way impacts: [Score = 3.0]

When compared to Alternative 2, the width of the right-of-way acquisition area would be reduced by approximately 23' on each side of I-10 between the Salt River and SR 143. However, the new right-of-way acquisition width would increase at each end of the viaduct due to the additional roadway width required to develop the viaduct ramp gore areas (near 24th Street and at the Broadway Curve).

The estimated land acquisition required for this alternative would be 70 acres, with an estimated of approximately \$230 million.

- Business and residential displacements: [Score = 3.0]

Approximately 63 businesses and 261 residences would be displaced with this alternative.

- Preliminary construction cost: [Score = 1.0]

The estimated cost (including design and construction) for this alternative is \$1.22 billion.

- Constructability: [Score = 1.0]

This alternative would cause significant impacts to traffic during construction due to the placement of the viaduct foundations, piers and superstructure within the median of the I-10 mainline.

The viaduct would also introduce technical challenges to build sequential construction projects over time as funding becomes available.

- Plan compatibility: [Score = 4.0]

This alternative would include provisions for a potential future HOV directional ramp connection between I-10 (east of the I-10/I-17 TI) and I-17 (west of the I-10/I-17 TI) in accordance with the adopted HOV system plan and the recommendations of the *MAG Value Lanes Study*.

One HOV lane would be retained on I-10 in each direction of travel between SR 51 and I-17. Two HOV lanes would be provided on I-10 in each direction of travel between I-17 and US 60, and one HOV lane would be retained in each direction of travel between US 60 and the Santan Freeway. This HOV lane configuration would provide the capacity needed for the projected 2030 HOV demand and achieve the intent of the RTP to provide a balanced multi-modal transportation corridor.

- Local agency acceptance: [Score = 1.0]

This alternative should expect lower acceptance due to the elimination of direct freeway access at three locations, but higher acceptance relating to the significant benefit in traffic capacity and level-of-service that would be realized with this alternative.

This alternative should also expect concerns by the local agencies regarding displacement and visual impacts to adjacent residential and commercial developments. Concerns could also arise regarding the ability of emergency service vehicles to access the viaduct when incidents occur on the HOV lanes.

Alternative No. 4: Express/Local Lanes Concept

Alternative 4 would modify Alternative 2 by removing one lane in each direction of travel from the local lanes, and adding those lanes to the I-10 express lanes. This alternative was developed to evaluate how the I-10 express and local lanes would operate when compared to Alternative 2.

At the north and south limits of the local lanes, the development of the entrance and exit ramp connections with I-10, I-17, SR 143 and US 60 were modified to conform to ADOT design practice for lane continuity and operational efficiency similar to Alternative 2.

I-10 would include three to seven express lanes in each direction of travel between Buckeye and Baseline Roads. The local lanes would vary from two to three lanes in each direction of travel and would provide access to SR 143 and the local street system. Two lane “express to local lanes” and “local to express lanes” transfer ramps would provide connections between the express and local lanes. Auxiliary lanes would generally be provided on the local lanes between service interchange entrance and exit ramps.

The I-10/SR 143 TI would be reconstructed to provide a fully directional freeway-to-freeway system interchange with ramp connections with SR 143 and local lanes.

Six express lanes would be developed on westbound I-10 approaching the I-10/I-17 TI that would allow three lanes each to continue on I-10 and to I-17. Three lanes would be provided on the eastbound I-10 through the I-10/I-17 TI.

Six express lanes would be developed on eastbound I-10 approaching the I-10/US60 TI. Three lanes would continue to the south on I-10, and three lanes would continue to eastbound US 60. Three express lanes would be provided on westbound I-10 through the I-10/US60 TI.

A potential future HOV directional ramp would be provided between I-10 (east of the I-10/I-17 TI) and I-17 (west of the I-10/I-17 TI). One HOV lane would be retained on I-10 in each direction of travel between SR 51 and I-17. Two HOV lanes would be provided in each direction of travel on I-10 between I-17 and US 60, and one HOV lane would be retained in each direction of travel between US 60 and the Santan Freeway.

- Operational performance of the I-10 express lanes between Buckeye and Baseline Roads: [Score = 4.0]

Alternative 4 would shift approximately 1,500 vehicles per hour (vph) from the local lanes to the express lanes in the peak direction of travel during the peak travel periods when compared to Alternative 2. Alternative 4 would achieve the goal of providing LOS ‘D’ or better within the limits of the local lanes.

The I-10 express lanes would operate at LOS ‘D’ or better within the limits of the local lanes. Due to the additional lanes provided on I-10 through the I-10/I-17 TI and the I-10/US60 TI, an additional 42,000 vpd (430,000 vpd total) would be anticipated to travel through the Broadway

Curve each day when compared to Alternative 1. The level-of-service at the Broadway Curve would be similar to Alternative 2.

- Operational performance of the remaining segments of the I-10 express lanes; the I-10 local lanes; the I-17, SR 143, and US 60 mainlines; and the system traffic interchanges: [Score = 3.0]

Based on the operational analysis conducted with this alternative, congestion (LOS E or F) would be anticipated to occur at the following locations within the study area:

- A.M. peak period: westbound I-10 from Baseline Road south to the I-10/SR202L TI
- A.M. peak period: westbound US 60 from the I-10/US60 TI east to Mill Avenue
- A.M. peak period: westbound local lanes from 40th Street to the I-10/US60 TI
- P.M. peak period: westbound I-17 from 7th Street east to the I-10/I-17 TI
- P.M. peak period: eastbound US 60 from Mill Avenue west to the I-10/US60 TI
- P.M. peak period: southbound SR 143 from the I-10/SR143 TI north to SR 202L (at the airport)
- P.M. peak period: northbound SR 143 from SR 202L (at the airport) to the I-10/ SR143 TI
- P.M. peak period: eastbound local lanes from the I-10/US60 TI to the I-10/I-17 TI

The eastbound and westbound local lanes would operate with congestion during the peak periods, but the congestion on the local lanes would not be expected to cause traffic queue lengths that would impact the operations on the I-10 express lanes. The level-of-service on I-10 would be improved between SR 51 and I-17, and between Baseline Road and Chandler Boulevard. Further refinement of the connections between the local lanes and I-10, I-17, SR 143 and US 60 will be conducted to address possible areas of congestion.

Similar to Alternative 2, Alternative 4 would provide the capacity for an additional traffic demand of approximately 42,000 vpd at the Broadway Curve when compared to Alternative 1. By providing one additional express lane on the I-10 at the I-10/US60 TI, an additional 30,000 vpd would have the ability to travel on I-10 between Baseline Road and Chandler Boulevard.

The additional traffic that would use the I-10 would decrease the volume of traffic on other freeway corridors and the local arterial street system during the A.M. and P.M. peak travel periods.

- Operational performance of the I-10 HOV lanes: [Score = 5.0]

Same as Alternative 2

- Geometric design of the I-10 express and local lanes; I-17, SR 143 and US 60 mainlines; and the system traffic interchanges: [Score = 4.0]

Same as Alternative 2

- Ability to provide for local access: [Score = 4.0]

Same as Alternative 2

- Environmental fatal flaws: [Score = No]

Same as Alternative 2

- Right-of-way impacts: [Score = 2.0]

The estimated acreage of acquisition required for this alternative would be 82 acres, with an estimated cost of approximately \$272 million.

- Business and residential displacements: [Score = 3.0]

Approximately 64 businesses and 261 residences would be displaced with this alternative.

- Preliminary construction cost: [Score = 3.0]

The estimated cost (including design and construction) for this alternative is \$908 million.

- Constructability: [Score = 4.0]

Same as Alternative 2

- Plan compatibility: [Score = 4.0]

Same as Alternative 2

- Local agency acceptance: [Score = 3.0]

This alternative should expect lower acceptance due to the elimination of direct freeway access at three locations, but higher acceptance relating to the significant benefit in traffic capacity and level-of-service that would be realized with this alternative. However, may arise from the cities of Phoenix and Tempe since the capacity of the local lanes would be lower than Alternative 2.

This alternative should also expect concerns by the local agencies regarding impacts to adjacent residential and commercial development.

Alternative No. 5: I-10 Widening Concept

Alternative 5 would widen the existing I-10 mainline by adding two general-purpose lanes in each direction of travel (to provide eight general-purpose lanes and two HOV lanes in each direction of travel) between I-17 and US 60. I-10 would be widened by one general-purpose lane in each direction of travel between SR 51 and I-17, and between US 60 and the Santan Freeway.

I-17 would be widened by one general-purpose lane approaching and departing the I-10/I-17 TI. US 60 would also be widened by one general-purpose lane in each direction of travel approaching and departing the I-10/US 60 TI. The I-10/SR143 TI would be reconstructed to provide a fully directional freeway-to-freeway interchange.

Eight general-purpose lanes would be provided on westbound I-10 approaching the I-10/I-17 TI that would allow four lanes each to continue on I-10 and to I-17. Four lanes would be provided on the eastbound I-10 through the I-10/I-17 TI.

Eight general-purpose lanes would be provided on eastbound I-10 approaching the I-10/US60 TI. Four lanes would continue to the south on I-10, and four lanes would continue to eastbound US 60. Four express lanes would be provided on westbound I-10 through the I-10/US60 TI.

The potential future HOV directional ramp would be provided between I-10 (east of the I-10/I-17 TI) and I-17 (west of the I-10/I-17 TI). One HOV lane would be retained on I-10 in each direction of travel between SR 51 and I-17. Two HOV lanes would be provided in each direction of travel on I-10 between I-17 and US 60, and one HOV lane would be retained in each direction of travel between US 60 and the Santan Freeway.

- Operational performance of the I-10 express lanes between Buckeye and Baseline Roads: [Score = Eliminated from further consideration]

Based on the operational analysis conducted with this alternative, congestion (LOS 'E' or 'F') would be anticipated to occur at the following locations within the study area:

- A.M. peak period: westbound I-10 from Broadway Rd south to the I-10/SR202L TI
- P.M. peak period: eastbound I-10 from the I-10/US60 TI west to the I-10/I-17 TI

Alternative 5 would not achieve the mandatory goal of providing LOS 'D' or better operating conditions on I-10 between Buckeye Road and Baseline Road during the A.M. and P.M. peak travel periods. While Alternative 5 would carry higher volumes of traffic than the "No-Build" alternative, this alternative would result in similar traffic congestion and vehicle queue lengths as the "No-Build" alternative because the existing weaving conditions would remain at the Broadway Curve. Therefore, this alternative was eliminated from further consideration.

4.1.2 Local Access Options

4.1.2.1 Evaluation Matrix

The individual evaluation criteria range in weight from 0.1 to 1.0. The scoring for these items is ranked from 1.0 to 5.0 when applied to the individual local access options.

Evaluation Criteria

- Operational performance of the express lanes, local lanes, and system traffic interchanges
- Consistency with interchange design practice on the Regional Freeway System
- Access to the freeway system
- Design fatal flaws
- Environmental fatal flaws
- Right-of-way impacts (acres and estimated cost)
- Business and residential displacements
- Preliminary construction cost
- Constructability
- Local agency acceptance

Evaluation Criteria Weighting

- Traffic operations on the I-10 express lanes, local lanes, and system traffic interchanges: [Weighting = 1.0]

The operations of the I-10 express lanes, local lanes, and system traffic interchanges should not be compromised to restore local access between the freeway system and the local arterial streets.

The I-10 express lanes should operate with level-of-service (LOS) 'D' or better operational characteristics based on Design Year 2030 traffic volume projections provided by MAG. For alternatives that include the local lanes, the I-10 express lanes should operate at LOS 'D' or better within the limits of the local lanes.

- Consistency with interchange design practice on the Regional Freeway System: [Weighting = 1.0]

The configuration of the ramp connections between the freeway system and the arterial streets must be in accordance with ADOT design standards and practice.

- Access to the freeway system: [Weighting = 0.9]

The ability to provide access between the freeway system and local arterial streets is important to the local communities. Local access is also important to minimize emergency response time for incident management on the freeway system and to residences and businesses in the local community.

Existing local access connections should be retained when technically, environmentally and economically feasible without negatively impacting the operations for the proposed I-10 improvements.

- Design fatal flaws: [Weighting = N/A]

The design of the alternatives must achieve AASHTO and ADOT geometric design standards to optimize highway safety and operational characteristics and minimize owner liability.

The AASHTO geometric design standards are mandatory for all elements. The ADOT geometric design standards are mandatory, unless a formal design exception can be obtained from ADOT Roadway Group.

The local interchanges should also provide an acceptable level-of-service for vehicles on the arterial street system that are traveling through the interchange.

- Environmental fatal flaws: [Weighting = N/A]

An identified environmental fatal flaw will automatically eliminate an alternative from further consideration. An environmental “fatal flaw” is defined as a known impact to an environmental resource that cannot be mitigated and would require an alternative roadway alignment.

- Right-of-way impacts: [Weighting = 0.8]

The estimated acreage of acquisition area and the estimated right-of-way costs should be minimized when evaluating alternatives for restoring local access to the freeway system.

- Business and residential displacements: [Weighting = 0.8]

The impacts an alternative would have on residences and businesses located along the freeway corridors within the study area.

- Preliminary construction cost: [Weighting = 0.8]

The local access options must achieve an acceptable level-of-service and geometric design characteristics in the most cost effective manner to obtain the necessary funding to implement the new facility.

- Constructability: [Weighting = 0.9]

The I-10 widening alternatives must allow the traveling public to utilize the existing roadways during the construction of the new facility to the maximum extent possible.

The ultimate “master plan” for the I-10 corridor must allow for a long-term implementation plan that would include the opportunity for phased construction of meaningful projects recognizing funding constraints.

- Local agency acceptance: [Weighting = 0.9]

The ability of the local access options to obtain local agency support for implementation as it is currently understood. This issue is critical to the perception of ADOT's performance. Political influences can alter costs, schedule and public acceptability.

Scoring Methodology:

The multi-discipline team reviewed each local access option based on each evaluation criteria. The resultant value of each item was determined by group discussion and overall consensus by the evaluation team. The composite alternative score is the sum of each evaluation criteria score multiplied by the weighting value. The final alternative scores, rankings and recommendations are shown in Table 30 on page 142.

4.1.2.2 Alternatives Analysis

Introduction

In addition to the I-10 widening alternatives, numerous options have been developed and evaluated to restore existing connections between the local arterial street and freeway systems.

All local access options were developed with the I-10 Widening Alternative 2 configuration as the base condition. Therefore, Alternative 2 is typically defined as “Option No. 1” for the local access options that were evaluated at each location. All right-of-way areas, business and residential displacements, and construction costs are based on the applicable modifications to Alternative 2 that were introduced with each local access option.

West Entrance to Phoenix Sky Harbor International Airport

Five options were evaluated to configure the west entrance to Phoenix Sky Harbor International Airport. A detailed description of each option is included in Section 3.0 of this report.

Option 1: I-10 Widening Alternative 2

The existing directional ramp connections would be retained between I-10 and Sky Harbor Boulevard (to/from the north).

The existing directional ramp between eastbound I-17 and westbound (northbound) I-10 (Ramp E-N) would remain in its current configuration to retain this freeway-to-freeway traffic movement. The Buckeye Road exit ramp would be disconnected from the I-10 express lanes and realigned to connect to the westbound local lanes, thereby eliminating the existing access between eastbound I-17 and Phoenix Sky Harbor International Airport (PSHIA). Travelers on eastbound I-17 that are destined for PSHIA would be required to exit from I-17 at 16th Street, travel north on 16th Street to Buckeye Road, and then continue to the east on Buckeye Road.

Conversely, the Buckeye Road entrance ramp would be disconnected from the express lanes and realigned to merge into the eastbound local lanes, thereby eliminating the existing access between PSHIA and westbound I-17. Travelers originating at PSHIA that are destined to westbound I-17 would be required to continue to the west on Buckeye Road to 16th Street, travel south on 16th Street to I-17, and then enter the westbound I-17 entrance ramp.

- Operational performance of the express lanes, local lanes, and system traffic interchanges: [Score = 4.0]

This option was evaluated with the I-10 Widening Alternative 2. The level-of-service goals would be achieved for all freeway system roadways.

- Consistency with interchange design practice on the Regional Freeway System: [Score = 4.0]

This option is consistent with current interchange design practice.

- Access to the freeway system: [Score = 1.0]

Access between I-10 and PSHIA would be retained with this option. Direct freeway access would be eliminated between I-17 and the west entrance to PSHIA.

- Design fatal flaws: [Score = No]

No design fatal flaws have been identified with this option. This option would not impact the Southwest Regional Operating Group (SROG) sanitary sewer line located along the Rental Car Center property line west of I-10 and north of I-17.

ADOT and Phoenix Aviation Department (PAD) will continue to coordinate design issues with the Federal Aviation Administration (FAA) that involve potential encroachment into the approach and departure surfaces of the south runway.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified with this option.

- Right-of-way impacts: [Score = 4.0]

The estimated land acquisition required for this option would be approximately 78 acres, with an estimated cost of approximately \$262 million.

This option would not require additional right-of-way acquisition from the Rental Car Center.

- Business and residential displacements: [Score = 4.0]

Approximately 61 businesses and 261 residences would be displaced with this alternative.

- Preliminary construction cost: [Score = 4.0]

The estimated cost (including design and construction) for this alternative is \$904 million.

- Constructability: [Score = 4.0]

This alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Ramp closures and restrictions would be required during construction of the new local lanes and service interchange ramps.

- Local agency acceptance: [Score = 1.0]

The City of Phoenix has requested that this option be eliminated from further consideration due to the loss of access between I-17 and PSHIA.

Option 2: Full Directional TI at Sky Harbor Boulevard

Option 2 was developed to restore access between I-10 and PSHIA with a fully directional interchange configuration with ramp connections with Sky Harbor Boulevard. The existing directional ramps (to/from the north) would remain connected to the I-10 express lanes. The new directional ramps (to/from the south) would be connected to the local lanes.

Access would be restored between PSHIA and I-17, but the new directional ramps would require the existing Buckeye Road ramps to be removed from service. The new ramp connection between the eastbound local lanes and westbound I-17 would require an additional westbound freeway lane departing the I-10/I-17 TI, which would require the project limits to be extended from 7th Street to 7th Avenue.

- Operational performance of the express lanes, local lanes, and the system traffic interchanges: [Score = 3.0]

Traffic volumes on the I-10 express and local lanes would not be expected to increase or decrease significantly with this option. The results of a level-of-service analysis indicate the I-10 express and local lanes would operate similar to the I-10 Widening Alternative 2.

The close proximity of the I-10/I-17 TI to Sky Harbor Boulevard (approximately 3,000 feet) would require a short weaving segment on Ramp E-N and the eastbound local lanes. These weaving areas could impact the operational characteristics of these roadways.

- Consistency with interchange design practice on the Regional Freeway System: [Score = 3.0]

This option is consistent with current design practice. However, the close proximity of the I-10/I-17 TI to Sky Harbor Boulevard (approximately 3,000 feet) would require a short weaving segment on Ramp E-N and the eastbound local lanes. These weaving areas could impact the operational characteristics of these roadways.

- Access to the freeway system: [Score = 2.0]

This option would provide full access between I-10 and PSHIA in all directions of travel, and would restore the connections between PSHIA and I-17. However, this option would remove the existing ramps at Buckeye Road that would eliminate the existing freeway access for the commercial development located west of I-10 and north of I-17.

- Design fatal flaws: [Score = No]

No design fatal flaws have been identified with this option. The new ramp connection from the eastbound local lanes to westbound I-17 would conflict with the SROG sanitary sewer line.

ADOT and Phoenix Aviation Department (PAD) will continue to coordinate design issues with the FAA that involve potential encroachment into the approach and departure surfaces of the south runway.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified with this option.

- Right-of-way impacts: [Score = 3.0]

The new ramp connection between the eastbound local lanes and westbound I-17 would require an additional westbound freeway lane departing the I-10/I-17 TI, which would require the project limits to be extended from 7th Street to 7th Avenue.

Additional right-of-way acquisition would be required with this option in comparison to Option 1, including additional acquisition from the Rental Car Center property. The estimated land acquisition required for this alternative would be approximately 83 acres, with an estimated cost of approximately \$269 million.

- Business and residential displacements: [Score = 3.0]

Approximately 66 businesses and 264 residences would be displaced with this alternative.

- Preliminary construction cost: [Score = 3.0]

The estimated cost (including design and construction) for this alternative is \$953 million.

- Constructability: [Score = 4.0]

This alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Ramp closures and restrictions would be required during construction of the new local lanes and service interchange ramps.

- Local agency acceptance: [Score = 2.0]

The City of Phoenix has requested that this option be eliminated from further consideration.

Option 3: Single-Point Urban Interchange at Buckeye Road

Option 3 was developed to restore full access between PSHIA and I-10 with a single-point urban interchange (SPUI) at Buckeye Road. This alternative would also restore the existing connections between PSHIA and I-17.

The existing directional ramp connections between I-10 and Sky Harbor Boulevard (to/from the north) would be removed from service to consolidate the freeway ramp connections into a single point of access into the airport at Buckeye Road.

The design of Ramp E-N would be modified to incorporate a concrete median barrier between Ramp E-N and the Buckeye Road exit ramp (from Ramp E-N). This revised ramp configuration would eliminate the short weaving section that was identified with Option 2.

The Buckeye Road southbound entrance ramp would connect to the eastbound local lanes with a parallel entrance design. A new connector road ramp would be constructed immediately west of and adjacent to the eastbound local lanes between Buckeye Road and westbound I-17. This new ramp would require an additional westbound freeway lane departing the I-10/I-17 TI, which would require the project limits to be extended from 7th Street to 7th Avenue.

- Operational performance of the express lanes, local lanes, and the system traffic interchanges: [Score = 4.0]

Traffic volumes on the I-10 express and local lanes would not be expected to increase or decrease significantly with this option. An operational analysis was conducted for this option, which indicates the level-of-service on the express and local lanes would be similar to the I-10 Widening Alternative 2.

- Consistency with interchange design practice on the Regional Freeway System: [Score = 4.0]

The SPUI interchange configuration has been used for service interchanges throughout the Phoenix metropolitan area.

- Access to the freeway system: [Score = 4.0]

This option would provide full access between I-10 and PSHIA in all directions of travel, and would restore the connections between PSHIA and I-17.

- Design fatal flaws: [Score = No]

No design fatal flaws have been identified with this option. The SROG sanitary sewer line would not be impacted by this option. ADOT and PAD will continue to coordinate design issues with the FAA that involve potential encroachment into the approach and departure surfaces of the south runway.

PAD is currently evaluating the future land use plans for the area, along with future employment and passenger forecasts at the airport. This evaluation will be conducted to develop traffic volume projections for the west airport entrance. Once these traffic volume projections are obtained from PAD, additional operational analysis will be performed for the SPUI to determine if this interchange configuration will operate with an acceptable level-of-service.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified with this option.

- Right-of-way impacts: [Score = 3.0]

The new ramp connection from the eastbound local lanes to westbound I-17 would require an additional westbound freeway lane departing the I-10/I-17 TI, which would require the project limits to be extended from 7th Street to 7th Avenue. Therefore, additional right-of-way acquisition would be required with this option in comparison to Option 1. Additional acquisition from the Rental Car Center would not be required with this option.

The estimated land acquisition required for this alternative would be approximately 82 acres, with an estimated cost of approximately \$268 million.

- Business and residential displacements: [Score = 3.0]

Approximately 66 businesses and 264 residences would be displaced with this alternative.

- Preliminary construction cost: [Score = 3.0]

The estimated cost (including design and construction) for this alternative is \$949 million.

- Constructability: [Score = 3.0]

This alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Ramp closures and restrictions would be required during construction of the new local lanes and service interchange ramps.

- Local agency acceptance: [Score = 4.0]

The City of Phoenix has requested that this option be carried forward for further consideration.

Option 4: Directional Ramps With Sky Harbor Boulevard, Half Interchange at Buckeye Road

Option 4 was developed to incorporate desirable elements of Options 2 and 3 by retaining the existing directional ramp connections between I-10 and Sky Harbor Boulevard (to/from the north), and a half-diamond interchange at Buckeye Road (I-10 and I-17 access to/from the south).

- Operational performance of the express lanes, local lanes, and system traffic interchanges: [Score = 4.0]

Traffic volumes on the I-10 express and local lanes would not be expected to increase or decrease significantly with this option. The results of a level-of-service analysis indicate the I-10 express and local lanes would operate similar to the I-10 Widening Alternative 2.

- Consistency with interchange design practice on the Regional Freeway System: [Score = 4.0]

This option would restore the existing interchange and ramp configurations with Sky Harbor Boulevard (to/from the north) and Buckeye Road (to/from the south).

- Access to the freeway system: [Score = 4.0]

This option would provide full access between I-10 and PSHIA in all directions of travel, and would restore the connections between PSHIA and I-17.

- Design fatal flaws: [Score = No]

No design fatal flaws have been identified with this option. The SROG sanitary sewer line would not be impacted by this option.

ADOT and PAD will continue to coordinate design issues with the FAA that involve potential encroachment into the approach and departure surfaces of the south runway.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified with this option.

- Right-of-way impacts: [Score = 3.0]

The new ramp connection between the eastbound local lanes and westbound I-17 would require an additional westbound freeway lane departing the I-10/I-17 TI, which would require the project limits to be extended from 7th Street to 7th Avenue. Therefore, additional right-of-way acquisition would be required with this option in comparison to Option 1. Additional acquisition from the Rental Car Center would not be required with this option.

The estimated land acquisition required for this alternative would be approximately 82 acres, with an estimated cost of approximately \$268 million.

- Business and residential displacements: [Score = 3.0]

Approximately 66 businesses and 264 residences would be displaced with this alternative.

- Preliminary construction cost: [Score = 3.0]

The estimated cost (including design and construction) for this alternative is \$947 million.

- Constructability: [Score = 4.0]

This alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Ramp closures and restrictions would be required during construction of the new local lanes and service interchange ramps.

- Local agency acceptance: [Score = 4.0]

The City of Phoenix has requested that this option be carried forward for further consideration.

24th Street Traffic Interchange

Option 1: Half-Diamond Interchange with Ramp Connections to the Express Lanes

This option would retain the existing half-diamond interchange at 24th Street with ramp connections with the I-10 express lanes (to/from the east).

- Operational performance of the express lanes, local lanes, and system traffic interchanges: [Score = 4.0]

This option was evaluated with the I-10 Widening Alternative 2 earlier of this document. The level-of-service goals would be achieved for all freeway system roadways.

The ramp connections to the I-10 express lanes could reduce the level-of-service on the express lanes approaching and departing the I-10/I-17 TI.

- Consistency with interchange design practice on the Regional Freeway System: [Score = 4.0]

This option would retain the current half-diamond TI configuration, which is consistent with current design practice.

- Access to the freeway system: [Score = 4.0]

This option would retain the existing access between 24th Street and the I-10 express lanes. Travelers on westbound I-10 would have opportunities to access PSHIA and the Rental Car Center from either the I-10 express lanes (at 24th Street) or the westbound local lanes (at Buckeye Road).

The 24th Street westbound exit ramp connection to the express lanes would provide a second opportunity for travelers to access PSHIA and the Rental Car Center if they should miss the exit to the local lanes near Broadway Road.

- Design fatal flaws: [Score = No]

No design fatal flaws have been identified with this option. ADOT and PAD will continue to coordinate design issues with the FAA that involve potential encroachment into the approach and departure surfaces of the south runway.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified with this option.

- Right-of-way impacts: [Score = 4.0]

The estimated land acquisition required for this alternative would be approximately 78 acres, with an estimated cost of approximately \$262 million.

- Business and residential displacements: [Score = 4.0]

Approximately 64 businesses and 261 residences would be displaced with this alternative.

- Preliminary construction cost: [Score = 4.0]

The estimated cost (including design and construction) for this alternative is \$904 million.

- Constructability: [Score = 3.0]

This alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Lane closures and restrictions would be required during reconstruction of the I-10 express lanes, construction of the local lanes, and reconstruction of the service interchange ramps.

- Local agency acceptance: [Score = 4.0]

The City of Phoenix has requested that this option be carried forward for further consideration.

Option 2: Half-Diamond TI with Ramp Connections to the Local Lanes

This option would retain the existing half-diamond interchange at 24th Street with ramp connections with the local lanes (to/from the east).

- Operational performance of the express lanes, local lanes, and system traffic interchanges: [Score = 4.0]

The reconfiguration of the 24th Street ramps would increase the traffic demand on the westbound local lanes by approximately 300-400 vph in the A.M. peak hour. In the P.M. peak hour, the traffic demand on the westbound local lanes would increase by approximately 300-400 vph on the westbound local lanes and approximately 200-500 vph on the eastbound local lanes. However, the traffic volumes on the express lanes would not be expected to decrease due to the significant travel demand that is projected for this segment of the I-10 corridor.

An operational analysis was conducted for this option, which indicates the level-of-service on the express and local lanes would be similar to the I-10 Widening Alternative 2. The ramp connections to the local lanes would be expected to improve the level-of-service on the express lanes approaching and departing the I-10/I-17 TI.

- Consistency with interchange design practice on the Regional Freeway System: [Score = 4.0]

This option would retain the current half-diamond TI configuration, which is consistent with current design practice.

- Access to the freeway system: [Score = 4.0]

This option would retain the existing access between 24th Street and I-10. All traffic destined for 24th Street or Buckeye Road would be required to exit the westbound express lanes near Broadway Road and use the local lanes to access these interchanges.

- Design fatal flaws: [Score = No]

No design fatal flaws have been identified with this option. ADOT and PAD will continue to coordinate design issues with the FAA that involve potential encroachment into the approach and departure surfaces of the south runway.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified with this option.

- Right-of-way impacts: [Score = 4.0]

The estimated acreage of acquisition required for this alternative is approximately 77 acres, with an estimated cost of approximately \$261 million.

- Business and residential displacements: [Score = 4.0]

Approximately 63 businesses and 261 residences would be displaced with this option.

- Preliminary construction cost: [Score = 4.0]

The estimated cost (including design and construction) for this alternative is \$905 million.

- Constructability: [Score = 4.0]

This alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Lane closures and restrictions would be required during reconstruction of the I-10 express lanes, construction of the local lanes, and construction of the service interchange ramps.

- Local agency acceptance: [Score = 3.0]

The City of Phoenix has requested that this option be carried forward for further consideration.

Option 3: Full Diamond TI with Ramp Connections to the Local Lanes

This option would reconfigure the 24th Street TI into a full diamond interchange with ramp connections to the eastbound and westbound local lanes.

- Operational performance of the express lanes, local lanes, and system traffic interchanges: [Score = 3.0]

The new 24th Street west ramps would increase the traffic demand volumes on the local lanes by approximately 400-800 vph in the A.M. and P.M. peak hours. However, the traffic volumes on the express lanes would not be expected to decrease due to the significant travel demand that is projected for this segment of the I-10 corridor.

A level-of-service analysis was conducted for this option, which indicates the level-of-service on the express and local lanes would be similar to the I-10 Widening Alternative 2. The ramp connections to the local lanes would be expected to improve the level-of-service of the express lanes approaching and departing the I-10/I-17 TI.

- Consistency with interchange design practice on the Regional Freeway System: [Score = 3.0]

This option would provide a full-diamond TI configuration, which is consistent with current design practice.

- Access to the freeway system: [Score = 2.0]

This option would retain the existing access between 24th Street and I-10. New access would be provided to I-10 (to/from the west) for the commercial development located south of I-10.

All traffic destined for 24th Street or Buckeye Road would be required to exit the westbound express lanes near Broadway Road and use the local lanes to access these interchanges.

This option would not support Options 2, 3, or 4 for the West Entrance to Phoenix Sky Harbor International Airport.

- Design fatal flaws: [Score = No]

No design fatal flaws have been identified with this option. ADOT and PAD will continue to coordinate design issues that involve potential encroachment into the approach and departure surfaces of the south runway.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified with this option.

- Right-of-way impacts: [Score = 3.0]

The estimated acreage of acquisition required for this alternative is approximately 81 acres, with an estimated cost of approximately \$307 million.

- Business and residential displacements: [Score = 3.0]

Approximately 63 businesses and 261 residences would be displaced with this alternative.

- Preliminary construction cost: [Score = 3.0]

The estimated cost (including design and construction) for this alternative is \$911 million.

- Constructability: [Score = 4.0]

This alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Lane closures and restrictions would be required during reconstruction of the express lanes, the construction of the local lanes, and the construction of the service interchange.

- Local agency acceptance: [Score = 2.0]

The City of Phoenix has requested that this option be eliminated from further consideration.

SR 143 Traffic Interchange

Option 1: I-10 Widening Alternative 2

The new I-10/SR143 TI would provide a three level system interchange with directional ramps for the freeway-to-freeway traffic movements with ramp connections to the eastbound and westbound local lanes.

The existing ramp from eastbound I-10 to Broadway Road/48th Street would be removed and replaced with a new exit ramp between the eastbound local lanes and Broadway Road.

Access to SR 143 from 48th Street would be provided with separate northbound and southbound connector roads that extend from Broadway Road to University Drive. The south ramps of the University Drive TI would be disconnected for SR 143, and realigned to transition into the 48th Street Connector Roads.

- Traffic operations of the express lanes, local lanes, and system traffic interchanges: [Score = 4.0]

This option was evaluated with the I-10 Widening Alternative 2. The level-of-service goals would be achieved for the freeway system roadways.

- Consistency with interchange design practice on the Regional Freeway System: [Score = 4.0]

This option would provide an interchange configuration that is consistent with current design practice.

- Access to the freeway system: [Score = 1.0]

The existing ramp from eastbound I-10 to Broadway Road/48th Street would be removed and replaced with a new exit ramp between the eastbound local lanes and Broadway Road.

Traffic on the eastbound local lanes road that is destined to southbound 48th Street would be required to exit the local lanes at the 40th Street TI, travel southbound on 40th Street to Broadway Road, and then continue to the east on Broadway Road to 48th Street. Travelers could also access 48th Street by exiting the local lanes at Broadway Road, and then travel westbound on Broadway Road to 48th Street.

Similar to existing conditions, direct freeway access would not be provided for the northbound 48th Street to westbound I-10 traffic movement. Traffic destined for westbound I-10 from 48th Street would be required to use the 40th Street TI.

Traffic generated from the commercial and industrial development in the vicinity of University Drive and 48th Street would not be able to directly access the freeway system to the south of University Drive. These travelers would be required to use the 32nd Street, 40th Street or Broadway Road traffic interchanges to access I-10, which would increase the level of congestion at these interchanges and the local arterial street system in the area.

- Design fatal flaws: [Score = Yes]

A traffic analysis was conducted at the University Drive TI to determine if a modified SPUI or diamond interchange configuration would operate efficiently with the additional traffic generated from the northbound and southbound connector roads to 48th Street. The traffic analysis indicates

the interchange would operate with an overall LOS 'F' during the A.M. and P.M. peak periods with this configuration.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified with this option.

- Right-of-way impacts: [Score = 4.0]

The estimated acreage of acquisition required for this alternative is approximately 78 acres, with an estimated right-of-way cost of approximately \$262 million.

- Business and residential displacements: [Score = 4.0]

Approximately 61 businesses and 261 residences would be displaced with this alternative.

- Preliminary construction cost: [Score = 4.0]

The estimated cost (including design and construction) for this alternative is \$904 million.

- Constructability: [Score = 4.0]

This alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Lane closures and restrictions would be required during the widening of the express lanes, and the construction of the SR 143 TI and local lanes.

- Local agency acceptance: [Score = 1.0]

The City of Phoenix has requested that this option be eliminated from further consideration.

Option 2: Restore South University Drive Ramps Concept 1

A revised concept for the SR 143 and University Drive interchanges was developed to restore access between University Drive and I-10.

Ramps E-N, W-N and the northbound 48th Street Connector Road would be reconfigured and would connect together to become the SR 143 mainline just north of I-10. An exit ramp would be provided from northbound SR143 to University Drive for travelers on Ramp E-N and northbound 48th Street. A separate exit ramp would be developed to allow travelers on Ramp W-N to access University Drive from the westbound local lanes.

The southbound University Drive entrance ramp would be reconnected to the southbound SR 143 mainline to the north of the I-10/SR143 TI.

The southbound 48th Street Connector Road would continue to the south similar to Option 1. The University Drive west ramp intersection would be reconfigured to a "modified SPUI" design to

allow traffic destined to 48th Street from southbound SR 143 to exit the freeway at the University Drive exit ramp, pass through the ramp intersection, and then continue to the south on the southbound connector road.

- Traffic operations of the express lanes, local lanes, and system traffic interchanges: [Score = 4.0]

This option would increase the traffic demand on the westbound local lanes by 100-200 vph in the A.M. and P.M. peak hours. The traffic demand on the I-10/SR143 TI Ramp S-E would be expected to increase by 300-400 vph in the A.M. and P.M. peak hours. However, the traffic volumes for the I-10 express lanes would not be expected to decrease due to the significant travel demand that is projected for this segment of the I-10 corridor.

An operational analysis was conducted for this option, which indicates the level-of-service on the I-10 express and local lanes, and the SR 143, would be similar to I-10 Widening Alternative 2.

- Consistency with interchange design practice on the Regional Freeway System: [Score = 4.0]

This option would provide an interchange configuration at University Drive that is consistent with current design practice.

This option would introduce a short weaving segment on the southbound SR 143 mainline between the University Drive entrance ramp and Ramp S-W. The southbound SR 143 mainline approach to the I-10/SR 143 TI would provide for a weaving area that would achieve the operational goals for SR 143.

- Access to the freeway system: [Score = 4.0]

This option would provide the ramp and connector roads necessary to restore the access that is currently available at the I-10/SR 143 TI.

- Design fatal flaws: [Score = Yes]

A traffic analysis was conducted for the University Drive TI to determine if a modified SPUI or diamond interchange configuration would operate efficiently with the additional traffic generated from the southbound connector road to 48th Street. The traffic analysis indicates the interchange would operate with an overall LOS 'F' during the A.M. and P.M. peak periods with this configuration.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified with this option.

- Right-of-way impacts: [Score = 4.0]

The estimated acreage of acquisition required for this alternative is approximately 79 acres, with an estimated right-of-way cost of approximately \$265 million.

- Business and residential displacements: [Score = 4.0]
- Approximately 63 businesses and 261 residences would be displaced with this alternative.

Preliminary construction cost: [Score = 4.0]

The estimated cost (including design and construction) for this alternative is \$914 million.

- Constructability: [Score = 4.0]

This alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Lane closures and restrictions would be required during the widening of the I-10 express lanes, construction of the local lanes, and the reconstruction of the SR 143 TI.

- Local agency acceptance: [Score = 3.0]

The City of Phoenix has indicated they would not support this alternative because the University Drive TI would operate with an unacceptable level-of-service with the additional traffic destined to 48th Street from SR 143. The City of Tempe has also requested this option be eliminated from further consideration.

Option 3: Restore South University Drive Ramps Concept 2

This option is similar to Option 2 in the westbound I-10 to northbound SR 143 direction of travel. In the southbound SR 143 to eastbound I-10 direction of travel, all proposed improvements would be similar to Option 2 except for traffic destined for 48th Street from southbound SR 143.

Option 3 would provide a separate exit from the southbound SR 143 mainline to the southbound 48th Street connector road, which would eliminate the need for this traffic to pass through the University Drive TI west ramp intersection.

- Traffic operations of the express lanes, local lanes, and system traffic interchanges:
[Score = 4.0]

This option would reduce the traffic demand on the southbound University Drive exit ramp by approximately 500 vph in the A.M. and P.M. peak hours.

An operational analysis was conducted for this option, which indicates the level-of-service on the I-10 express and local lanes, and the SR 143 mainline, would be similar to I-10 Widening Alternative 2.

- Consistency with interchange design practice on the Regional Freeway System: [Score = 4.0]

This option would provide an interchange configuration at University Drive that is consistent with current design practice.

This option would introduce a short weaving segment on the southbound SR 143 mainline between the University Drive entrance ramp and Ramp S-W. The southbound SR 143 mainline approach to the I-10/SR 143 TI would provide for a weaving area that would achieve the operational goals for SR 143.

- Access to the freeway system: [Score = 4.0]

This option would provide the ramp and connector roads necessary to restore the access that is currently available at the I-10/SR 143 TI.

- Design fatal flaws: [Score = No]

No design fatal flaws have been identified with this option.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified with this option.

- Right-of-way impacts: [Score = 3.0]

The estimated acreage of acquisition required for this alternative is approximately 83 acres, with an estimated right-of-way cost of approximately \$272 million.

- Business and residential displacements: [Score = 4.0]

Approximately 63 businesses and 261 residences would be displaced with this alternative.

- Preliminary construction cost: [Score = 3.0]

The estimated cost (including design and construction) for this alternative is \$920 million.

- Constructability: [Score = 4.0]

This alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Lane closures and restrictions would be required during the widening of the I-10 express lanes, construction of the local lanes, and the reconstruction of the SR 143 TI.

- Local agency acceptance: [Score = 5.0]

The Cities of Phoenix and Tempe have requested that this option be carried forward for further evaluation.

Option 4: Restore the Ramp from the Eastbound Local Lanes to Southbound 48th Street

Option 1 was modified to provide a ramp connection between the eastbound local lanes and southbound 48th Street.

- Traffic operations of the express lanes, local lanes, and system traffic interchanges: [Score = 4.0]

The new 48th Street exit ramp would decrease the peak hour volume on the 40th Street eastbound exit ramp by approximately 400-500 vph in the A.M. and P.M. peak hours. However, the traffic volumes on the mainline would not be expected to decrease due to the significant travel demand that is projected for this segment of the I-10 corridor.

An operational analysis was conducted for this option, which indicates the level-of-service on the express and local lanes would be similar to the I-10 Widening Alternative 2.

- Consistency with interchange design practice on the Regional Freeway System: [Score = 3.0]

ADOT would usually avoid a ramp configuration with a ramp departing another ramp. However, this exit ramp configuration would serve two service interchange movements and would not include any system interchange movements.

- Access to the freeway system: [Score = 4.0]

This option would restore the existing connection between eastbound I-10 and southbound 48th Street.

- Design fatal flaws: [Score = No]

No design fatal flaws have been identified with this option.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified with this option.

- Right-of-way impacts: [Score = 4.0]

The estimated acreage of acquisition required for this alternative is approximately 79 acres, with an estimated right-of-way cost of approximately \$264 million.

- Business and residential displacements: [Score = 4.0]

Approximately 63 businesses and 261 residences would be displaced with this alternative.

- Preliminary construction cost: [Score = 4.0]

The estimated cost (including design and construction) for this alternative is \$905 million.

- Constructability: [Score = 4.0]

This alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Lane closures and restrictions would be required during the widening of the I-10 express lanes, the construction of the local lanes and the SR 143 TI.

- Local agency acceptance: [Score = 5.0]

The City of Phoenix has requested that this option be carried forward for further consideration.

Option 5: Westbound Broadway Road to University Drive Connection

This option was developed to provide a “slip ramp” connection between the westbound Broadway Road entrance ramp and the University Drive TI (access to SR 143). The east ramp intersection would be reconfigured to provide a “modified SPU” configuration that would allow traffic to pass through the ramp intersection and continue to the north to enter the northbound SR 143 mainline.

This option would allow traffic on westbound Broadway Road to access northbound SR 143 without being required to travel through the Broadway Road TI and 48th Street signalized intersections.

- Traffic operations of the express lanes, local lanes, and system traffic interchanges: [Score = 4.0]

This option would not impact the operations of the express lanes, local lanes or system traffic interchanges.

- Consistency with interchange design practice on the Regional Freeway System: [Score = 2.0]

This option that includes the “slip-ramp” design would not be consistent with current design practice on the Regional Freeway System.

- Access to the freeway system: [Score = 4.0]

This option would not provide an additional access to the freeway system. A second route would be provided for westbound Broadway Road traffic to access northbound SR 143.

- Design fatal flaws: [Score = No]

No design fatal flaws have been identified with this option.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified with this option.

- Right-of-way impacts: [Score = 2.0]

The estimated acreage of acquisition required for this alternative would be approximately 80 acres, with an estimated right-of-way cost of approximately \$266 million.

This option would impact the existing parking lot used by the multi-story office building that includes Maricopa Community College. The additional roadway width required for the University Drive exit ramp would require additional right-of-way from the commercial developments east of SR 143.

- Business and residential displacements: [Score = 2.0]

Approximately 64 businesses and 261 residences would be displaced with this option.

- Preliminary construction cost: [Score = 4.0]

The estimated cost (including design and construction) for this alternative is \$915 million.

- Constructability: [Score = 4.0]

This alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Lane closures and restrictions would be required during the widening of the I-10 express lanes, construction of the local lanes, and the reconstruction of the SR 143 TI.

- Local agency acceptance: [Score = 2.0]

The City Tempe has requested that this option be eliminated from further evaluation.

Baseline Road Eastbound Exit Ramp

Option 1: Ramp Connection to the Eastbound Express Lanes

This option would retain the existing ramp connection from the eastbound I-10 express lanes to Baseline Road.

- Traffic operations of the express lanes, local lanes and system traffic interchanges: [Score = 4.0]

This option was evaluated with the I-10 Widening Alternative 2. The level-of-service goals would be achieved for all freeway system roadways.

The ramp connection to the eastbound I-10 express lanes could reduce the level-of-service of I-10 approaching the I-10/US60 TI in the future.

- Consistency with interchange design practice on the Regional Freeway System: [Score = 4.0]

This option would retain the current diamond TI configuration with Baseline Road, which is consistent with current design practice.

- Access to the freeway system: [Score = 2.0]

This option would retain the existing access between the I-10 express lanes and Baseline Road.

Travelers entering the I-10 corridor from Buckeye Road, 32nd Street, 40th Street, SR 143 and Broadway Road would utilize the eastbound local lanes to enter either I-10 (to the south) or US 60 (to the east) at the I-10/US60 TI. Access would not be provided to Baseline Road from the local lanes.

- Design fatal flaws: [Score = No]

No design fatal flaws have been identified with this option.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified with this option.

- Right-of-way impacts: [Score = 4.0]

The estimated acreage of acquisition required for this alternative is approximately 78 acres, with an estimated right-of-way costs would be approximately \$262 million. No new right-of-way would be required from the existing office and commercial developments west of I-10 and south of the Western Canal.

- Business and residential displacements: [Score = 4.0]

Approximately 61 businesses and 261 residences would be displaced with this option.

- Preliminary construction cost: [Score = 4.0]

The estimated cost (including design and construction) for this alternative is \$904 million.

- Constructability: [Score = 3.0]

This alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Lane closures and restrictions would be required during the widening of the I-10 express lanes and construction of the local lanes.

- Local agency acceptance: [Score = 2.0]

The Cities of Tempe and Phoenix have requested that this option be eliminated from further evaluation.

Option 2: Ramp Connection to the Eastbound Local Lanes

This option would retain the existing interchange at Baseline Road with the ramp connection to the eastbound local lanes.

- Traffic operations of the express lanes, local lanes, and system traffic interchanges: [Score = 4.0]

The reconfiguration of the Baseline Road ramp would increase the traffic demand on the eastbound local lanes by approximately 300 vph in the A.M. peak hour, and approximately 500 vph in the P.M. peak hour. However, the traffic volumes on the I-10 express lanes would not be expected to decrease due to the significant travel demand that is projected for this segment of the I-10 corridor.

An operational analysis was conducted for this option, which indicates the level-of-service on the express and local lanes would be similar to the I-10 Widening Alternative 2. The ramp connection to the local lanes would be expected to improve the level-of-service of the I-10 express lanes approaching the I-10/US 60 TI.

- Consistency with interchange design practice on the Regional Freeway System: [Score = 4.0]

This option would retain the current diamond TI configuration with Baseline Road, which is consistent with current design practice.

- Access to the freeway system: [Score = 4.0]

This option would retain the existing access between eastbound I-10 corridor (via the eastbound local lanes) and Baseline Road. This option would provide access to Baseline Road from all of the freeways (I-10, I-17, SR 143 and US 60) and service interchanges located in the study area.

All traffic on eastbound I-10 (north of I-17) and I-17 that is destined for Baseline Road would be required to exit the I-10 express lanes at 32nd Street and use the eastbound local lanes to access Baseline Road. This maneuver may not be intuitive to drivers that are unfamiliar with the area where they would be expecting the exit ramp near their geographic destination.

- Design fatal flaws: [Score = No]

No design fatal flaws have been identified with this option.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified with this option.

- Right-of-way impacts: [Score = 4.0]

The estimated acreage of acquisition required for this alternative is approximately 78 acres, with an estimated right-of-way costs would be approximately \$262 million. No new right-of-way would be required from the existing office and commercial developments west of I-10 and south of the Western Canal.

- Business and residential displacements: [Score = 4.0]

Approximately 61 businesses and 261 residences would be displaced with this alternative.

- Preliminary construction cost: [Score = 4.0]

The estimated cost (including design and construction) for this alternative is \$904 million.

- Constructability: [Score = 4.0]

This alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Lane closures and restrictions would be required during the widening of the I-10 express lanes and the construction of the local lanes.

- Local agency acceptance: [Score = 3.0]

The City of Tempe has requested that this option be eliminated from further evaluation. The City of Phoenix is willing to consider this option, but would prefer Option 3.

Option 3: Ramp Connections to the Eastbound Express and Local Lanes

Option 3 would restore the existing ramp connection with the eastbound I-10 express lanes, and provide an additional connection to the eastbound local lanes.

- Traffic operations of the express lanes, local lanes, and system traffic interchanges: [Score = 4.0]

An operational analysis was conducted for this option, which indicates the level-of-service on the I-10 express and local lanes would be similar to I-10 Widening Alternative 2.

- Consistency with interchange design practice on the Regional Freeway System: [Score = 4.0]

This option would retain the current diamond TI configuration at Baseline Road with braided ramp connections with the I-10 express lanes and local lanes. Braided ramp connections have been used at several locations on the Regional Freeway System near system interchanges.

This application of combining three ramps into a single roadway (Ramp W-S, the Baseline Road exit ramp from the express lanes, and the Baseline Road exit ramp from the local lanes) approaching Baseline Road would be a new configuration. It is anticipated an acceptable design solution will be developed to support this option.

- Access to the freeway system: [Score = 5.0]

The existing Baseline Road exit ramp would remain in its current configuration with a connection to the I-10 express lanes. Travelers entering the eastbound local lanes from Buckeye Road, 32nd Street, 40th Street, SR 143 and Broadway Road would also be able to exit the freeway system at Baseline Road.

Out-of-town travelers who are destined for the Arizona Mills Mall, Pointe South Mountain, and other commercial and residential developments would be able to use the Baseline Road exit that would be located near the geographic location of their intended destination.

- Design fatal flaws: [Score = No]

No design fatal flaws have been identified with this option.

- Environmental fatal flaws: [Score = No]

No environmental fatal flaws have been identified with this option.

- Right-of-way impacts: [Score = 3.0]

The estimated acreage of acquisition required for this alternative is approximately 80 acres, with an estimated right-of-way cost of approximately \$267 million. The existing office complex located west of I-10 and south of the Western Canal would be impacted by this option.

- Business and residential displacements: [Score = 3.0]

Approximately 63 businesses and 263 residences would be displaced with this alternative. The existing office complex located west of I-10 and south of the Western Canal would be impacted by this option.

- Preliminary construction cost: [Score = 3.0]

The estimated cost (including design and construction) for this alternative is \$924 million.

- Constructability: [Score = 4.0]

This alternative would allow the traveling public to utilize the existing roadways during the construction of the new facility. Lane closures and restrictions would be required during the widening of the I-10 express lanes and construction of the local lanes.

- Local agency acceptance: [Score = 5.0]

The Cities of Phoenix and Tempe have requested that this option be carried forward for further evaluation.

4.1.3 Alternatives "Good Features/Issues" Listing

As each I-10 Widening Alternative and Local Access Option was reviewed, an alternatives "Good Features/Issues" listing was developed by the team. The purpose of this listing was to identify positive features of each alternative that may be evaluated during the DCR/EIS phase of development.

- Alternatives 2, 3 or 4: Provide one additional northbound and southbound general-purpose lane (3 lanes each direction of travel) on SR 143 at University Drive.
- Alternatives 2, 3 or 4: Develop the initial "express to local lanes" exit ramp as a two-lane mandatory exit from the outside general-purpose lanes. Develop all internal "express to local lanes" and "local lanes to express lanes" transfer ramps as a two-lane ramp with a mandatory exit from the outside lane, and the second lane designed as an optional lane with the through movement.
- Alternatives 2 or 3: Provide five westbound express lanes on I-10 between Broadway Road and 32nd Street (between the transfer ramps).
- Alternatives 2, 3 or 4: Evaluate a braided ramp configuration for the Baseline Road northbound entrance ramp to eliminate the current weaving conditions on the westbound local lanes.

4.2 AGENCY ALTERNATIVES SCREENING MEETING – TIER 2

The Tier 2 Alternatives Screening Meeting was held December 19, 2006. The purpose of the Tier 2 Alternatives Screening Meeting was to obtain federal, state and local agency input regarding the alternatives, to review the Tier 1 results, and to determine the I-10 Widening Alternatives and Local Access Options that should be carried forward to the DCR/EIS stage of development.

The Agency Project Review Team (APRT) included representatives from ADOT, FHWA and MAG. After discussion, the Agency Project Review Team reached consensus to support the recommendations of the Tier 1 Alternative Screening process.

4.3 AGENCY COORDINATION MEETING – TIER 3

The Tier 2 Agency Monthly Coordination Meeting was held January 16, 2007 in the ADOT Phoenix Construction District Turquoise Conference Room. The purpose of the Tier 3 Agency Coordination Meeting was to present the recommendations of the Tier 1 Agency Alternatives Screening Meeting and to finalize federal state and local agency input regarding which alternatives should be carried forward to the DCR/EIS stage of development.

Meeting participants included representatives from ADOT, FHWA, MAG, and the cities of Phoenix and Tempe. After discussion, all parties agreed to support the recommendations of the Tier 1 Alternatives Screening process.

4.4 RECOMMENDATIONS FOR FURTHER STUDY

The Project Team recommends the following I-10 Widening Alternatives for further study through the DCR and EIS phase of development:

- Alternative 2: Express/Local Lanes Concept
- Alternative 4: Express/Local Lanes Concept

The Project Team also recommends the following local access options for further study in conjunction with the I-10 widening alternatives:

- West Entrance to Phoenix Sky Harbor International Airport:
 - Option 3: Single Point Urban Interchange at Buckeye Road
 - Option 4: Directional Ramps with Sky Harbor Boulevard, Half Diamond Interchange at Buckeye Road
- 24th Street Traffic Interchange:
 - Option 1: Half Diamond Interchange with Ramp Connections to the Express Lanes
 - Option 2: Half Diamond Interchange with Ramp Connections to the Local Lanes
- I-10/SR 143 TI:
 - Option 3: Restore South University Drive Ramps Concept 2
 - Option 4: Restore Ramp from the Eastbound Local Lanes to Southbound 48th Street
- Baseline Road TI Eastbound Exit Ramp
 - Option 3: Ramp Connections with the Express and Local Lanes

These recommendations will be confirmed after the Project Team reviews the comments received from the public during the Public Information Meetings that are planned in the Spring of 2007.

Table 29 – Alternatives Matrix for I-10 Widening Alternatives

Description	Weighting	Alternative Number				
		1 (1988 Express/ Local Lanes Concept)	2 (Express/Local Lanes Concept)	3 (Express/Local Lanes Concept with HOV Viaduct)	4 (Express/Local Lanes Concept)	5 (I-10 Widening Concept)
Operational performance of the I-10 express lanes between Buckeye and Baseline Roads	1.0	2	4	4	4	Eliminated
Operational performance of the remaining segments of the I-10 express lanes; the local lanes; the I-17, SR 143 and US 60 mainlines; and the system interchanges	0.9	2	4	4	3	
Operational performance of the I-10 HOV lanes	0.9	2	5	5	5	
Geometric design of the I-10 express and local lanes; I-17, SR 143 and US 60 mainlines; and the system traffic interchanges	1.0	1	4	4	4	
Ability to provide for local access	0.8	4	4	4	4	
Environmental fatal flaws	Yes/No	No	No	No	No	
Right-of-way impacts (acreage/costs in millions)	0.8	4 (59/\$207)	2 (78/\$262)	3 (70/\$230)	2 (82/\$272)	
Business and residential displacements (No.)	0.8	4 (54/240)	3 (61/261)	3 (63/261)	3 (64/261)	
Preliminary construction cost (\$ in millions)	0.8	4 (\$765)	3 (\$904)	1 (\$1,213)	3 (\$908)	
Constructability	0.9	4	4	1	4	
Plan compatibility	0.9	2	4	4	4	
Local agency acceptance	0.8	2	3	1	3	
Alternative Score:		26.4	35.3	30.2	34.4	
Recommendation		Eliminate	Retain	Eliminate	Retain	Eliminate

Table 30 – Alternatives Matrix for Local Access Options

Description	Weighting	West Entrance to Phoenix Sky Harbor International Airport				24th Street Traffic Interchange			I-10/SR143 TI - 48th Street Connection	
		Option 1 (I-10 Widening Alternative 2)	Option 2 (Full Directional TI at Sky Harbor Boulevard)	Option 3 (Single-Point Urban Interchange at Buckeye Road)	Option 4 (Directional Ramps with Sky Harbor Boulevard, Half Interchange at Buckeye Road)	Option 1 (Half-Diamond TI with Ramp Connections to the Express Lanes)	Option 2 (Half Diamond TI with Ramp Connections to the Local Lanes)	Option 3 (Full Diamond TI with Ramp Connections to the Local Lanes)	Option 1 (I-10 Widening Alternative 2)	Option 4 (Restore Ramp from Eastbound Local Lanes to Southbound 48th Street)
Operational performance on the I-10 express lanes, local lanes, and system traffic interchanges	1.0	4	3	4	4	4	4	3	4	4
Consistency with interchange design practice on the Regional Freeway System	1.0	4	3	4	4	4	4	3	4	3
Access to freeway system	0.9	1	2	4	4	4	4	2	1	4
Design fatal flaws	Yes/No	No	No	No	No	No	No	No	No	No
Environmental fatal flaws	Yes/No	No	No	No	No	No	No	No	No	No
Right-of-way impacts (acreage/\$ in millions)	0.8	4 (78/\$262)	3 (83/\$269)	3 (82/\$268)	3 (82/\$268)	4 (78/\$262)	4 (77/\$261)	3 (81/\$307)	4 (78/\$262)	4 (79/\$264)
Business and residential displacements (No.)	0.8	4 (61/261)	3 (66/264)	3 (66/264)	3 (66/264)	4 (64/261)	4 (63/261)	3 (63/261)	4 (61/261)	4 (63/261)
Preliminary construction costs (\$ in millions)	0.8	4 (\$904)	3 (\$953)	3 (\$949)	3 (\$947)	4 (\$904)	4 (\$905)	3 (\$911)	4 (\$904)	4 (\$905)
Constructability	0.9	4	4	3	4	3	4	4	4	4
Local agency acceptance	0.9	1	2	4	4	4	3	2	1	5
Alternative Score:		23	20.4	25.1	26	27.5	27.5	20.4	23	28.3
Recommendation		Eliminate	Eliminate	Retain	Retain	Retain	Retain	Eliminate	Eliminate	Retain

Description	Weighting	I-10/SR143 TI - University Drive South Ramps			I-10/SR143 TI - Broadway Road Connection		Baseline Road TI Eastbound Exit Ramp		
		Option 1 (I-10 Widening Alternative 2)	Option 2 (Restore South University Drive Ramps Concept 1)	Option 3 (Restore South University Drive Ramps Concept 2)	Option 1 (I-10/SR143 TI Option 2)	Option 5 (Westbound Broadway Road to University Drive Connection)	Option 1 (Ramp Connection to the Eastbound Local Lanes)	Option 2 (Ramp Connection to the Eastbound Express Lanes)	Option 3 (Ramp Connections to the Express Lanes and the local lanes)
Operational performance on the I-10 express lanes, local lanes, and system traffic interchanges	1.0	4	4	4	4	4	4	4	4
Consistency with interchange design practice on the Regional Freeway System	1.0	4	4	4	4	2	4	4	4
Access to freeway system	0.9	1	4	4	4	4	2	4	5
Design fatal flaws	Yes/No	Yes	Yes	No	No	No	No	No	No
Environmental fatal flaws	Yes/No	No	No	No	No	No	No	No	No
Right-of-way impacts (acreage/\$ in millions)	0.8	4 (78/\$262)	4 (79/\$265)	3 (83/\$272)	4 (79/\$265)	2 (80/\$266)	4 (78/\$262)	4 (78/\$262)	3 (80/\$267)
Business and residential displacements (No.)	0.8	4 (61/261)	4 (63/261)	4 (63/261)	4 (61/261)	2 (64/261)	4 (61/261)	4 (61/261)	3 (63/263)
Preliminary construction costs (\$ in millions)	0.8	4 (\$904)	4 (\$914)	3 (\$920)	4 (\$914)	4 (\$915)	4 (\$904)	4 (\$904)	3 (\$924)
Constructability	0.9	4	4	4	4	4	3	4	4
Local agency acceptance	0.9	1	3	5	3	2	2	3	5
Alternative Score:		23	27.5	27.7	27.5	21.4	23.9	27.5	27.8
Recommendation		Eliminate	Eliminate	Retain	Retain	Eliminate	Eliminate	Eliminate	Retain